

Patent claims

1. An in-house subsystem in a mobile radio network (1) and/or in a wired communication network (2) comprising a fixed home base station (3), at least one repeater station (6; 7; 8; 9) and at least one mobile station (17; 18; 19; 20), the fixed home base station (3) having at least one connection means (4; 22) to an external telecommunication network (1; 2) and at least one transmission/reception antenna (5) for internal connection to the at least one repeater station (6; 7; 8; 9), the at least one repeater station (6; 7; 8; 9) having at least one connection element (10; 11; 12; 13; 14; 15; 16) for connection either to the home base station (3) or to another repeater station (6; 7; 8; 9), and at least one transmission/reception antenna (10; 11; 12; 13; 14; 15) for connection either to the at least one mobile station (17; 18; 19; 20) or to another repeater station (6; 7; 8; 9), and the at least one mobile station (17; 18; 19; 20) having a transmission/reception antenna for communication with the mobile radio network (1) and/or with a repeater station (6; 7; 8; 9), characterized in that all the elements (3; 6; 7; 8; 9) of the subsystem have means which automatically organize the splitting of the system resources between the home base station, the at least one repeater station (6; 7; 8; 9) and the at least one mobile station (17; 18; 19; 20).
2. The subsystem as claimed in claim 1, characterized in that the means for automatic organization at least comprise an algorithm for automatically splitting the system resources between intermediate connections present [lacuna] the home base stations (3), the at least one repeater stations (6; 7; 8; 9) and the at least one mobile station (17; 18; 19; 20), each element of the subsystem (3; 6; 7; 8; 9)



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3. The subsystem as claimed in one of the preceding claims, characterized in that the connection means in the home base station are/is a transmission/reception unit for wireless communication with a mobile radio network (1) and/or are/is a wired connection (22) to a landline telecommunication network (2).

4. The subsystem as claimed in one of the preceding claims, characterized in that the at least one connection element in the repeater station (6; 7; 8; 9) is a transmission/reception antenna (4) and/or a cable connection (16).

5. The subsystem as claimed in one of the preceding claims, characterized in that, in the case of at least one line of connection, the communication from the home base station to a mobile station is routed via at least one repeater station (6; 7; 8; 9) or via a plurality of repeater stations (6; 7; 8; 9) communicating with one another.

6. The subsystem as claimed in one of the preceding claims, characterized in that the system resources split among one another contain at least different frequencies.

7. The subsystem as claimed in one of the preceding claims, characterized in that the system resources split among one another contain at least different timeslots.

8. The subsystem as claimed in one of the preceding claims, characterized in that the system resources split among one another contain at least different Code Division Multiple Access "CDMA" codes.

9. The subsystem as claimed in one of the preceding claims, characterized in that each mobile station (17; 18; 19; 20), each repeater station (6; 7; 8; 9) and the home

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base station (3) have a respective personal identification number "PIN", and the repeater stations (6; 7; 8; 9) and/or the home base station (3) has a means for distinguishing between mobile stations with access authorization and mobile stations without access authorization.

10. The subsystem as claimed in claim 9, characterized in that the means for distinguishing between mobile stations with access authorization and mobile stations without access authorization has a data memory which contains the PIN of mobile stations with access authorization.

11. The subsystem as claimed in one of the preceding claims, characterized in that the subsystem is connected to the mobile radio network (1) on the basis of the Frequency Division Duplex "FDD" method and the connection in the subsystem is based on the Frequency Division Duplex "TDD" method.

12. The subsystem as claimed in one of the preceding claims, characterized in that, in the case of one repeater station (6; 7; 8; 9), said repeater station has means for implementing transfer and/or acceptance of the mobile station (17; 18; 19; 20) to/by the home base station (3).

13. The subsystem as claimed in one of the preceding claims, characterized in that, in the case of at least two repeater stations (6; 7; 8; 9), said repeater stations have means for implementing connection transfer for the mobile station (17; 18; 19; 20) among the repeater stations (6; 7; 8; 9).

14. The subsystem as claimed in one of the preceding claims, characterized in that the at least one repeater station (6; 7; 8; 9) has means for implementing connection transfer and connection acceptance for the mobile station (17; 18; 19; 20) between the mobile radio network (1) and the repeater stations (6; 7; 8; 9).

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15. The subsystem as claimed in one of the preceding claims, characterized in that the subsystem is associated with the Global System for Mobile Communications "GSM" network.

16. The subsystem as claimed in one of the preceding claims, characterized in that the subsystem is associated with the Universal Mobile Telecommunication System "UMTS" network.

17. The subsystem as claimed in one of the preceding claims, characterized in that the subsystem's landline network connection is associated with the Integrated Services Digital Network "ISDN" network.

18. The subsystem as claimed in one of the preceding claims, characterized in that the subsystem's landline network connection is associated with the PSTN network.

19. The subsystem as claimed in one of the preceding claims, characterized in that the subsystem's landline network connection is associated with the power supply network/powerline network.

20. The subsystem as claimed in one of the preceding claims, characterized in that the subsystem's landline network connection is associated with the Digital Subscriber Line/Asymmetric Digital Subscriber Line "xDSL/ADSL" network.

21. A method for communication in a subsystem of a mobile network (1) and/or of a wired communication network, where, in the subsystem, which comprises a plurality of elements containing a home base station, at least one repeater station (6; 7; 8; 9) and at least one mobile station (17; 18; 19; 20), where the home base station (3) maintains

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a connection to a mobile radio network (1) and possibly to a landline network (2) and forwards this connection to the at least one mobile station (17; 18; 19; 20) using the at least one repeater station (6; 7; 8; 9), characterized in that the at least one repeater station (6; 7; 8; 9) automatically splits the resources.

22. The method as claimed in claim 21, characterized in that the resource splitting includes splitting used frequencies and/or used timeslot and/or CDMA code.

23. The method as claimed in one of the preceding method claims, characterized in that only that element, in particular mobile station or base station, which initiates the logical connection setup starts the automatic use of the resources, in particular setup/clear-down of the data channels, between itself and the next connection element in the logical connection chain, and, if there are one or more repeater stations (6; 7; 8; 9) in the logical line of connection, the respective repeater station (6; 7; 8; 9) performs channel setup for the next element, including automatic resource use.

24. The method as claimed in one of the preceding method claims, characterized in that a repeater station (6; 7; 8; 9) serves a plurality of mobile stations (17; 18; 19; 20) at the same time.

25. The method as claimed in one of the preceding method claims, characterized in that the repeater station (6; 7; 8; 9) transmits on a Broadcast Control Channel "BCCH" a list of resources already used which cannot be used by the mobile station initiating a connection.

26. The method as claimed in one of the preceding method claims, characterized in that it is carried out for connection setup initiated from the landline network and/or mobile radio network (1) "incoming call".

27. The method as claimed in one of the preceding method claims, characterized in that it is carried out for connection setup initiated by the subsystem "outgoing call".

28. The method as claimed in one of the preceding method claims, characterized in that it is carried out within the subsystem for connection transfer procedures between various repeater stations (6; 7; 8; 9) and/or between a repeater station (6; 7; 8; 9) and the base station (3).